

Claims:

- 1 1. A method for mixing silica filled rubber comprising the steps of:
2 adding a polymer base, silicate mineral filler, water, and silicate mineral coupling agent to
3 a mixer to create a first mixture, wherein the silicate mineral filler to water weight ratio is from 1:4
4 to 10:1; and
5 mixing the first mixture to a target temperature suitable for initiating coupling of the silicate
6 mineral filler to the polymer base.
- 1 2. The method of claim 1, wherein the silicate mineral filler to water weight ratio is from 1:3
2 to 5:1.
- 1 3. The method of claim 1, wherein the silicate mineral filler to water weight ratio is from 1:2
2 to 4:1.
- 1 4. The method of claim 1, wherein the first mixture includes from about 10 to 100 parts by
2 weight of silicate mineral filler per 100 parts by weight of the polymer base.
- 1 5. The method of claim 1, wherein the first mixture includes from about 1 to 30 parts by
2 weight silicate mineral coupling agent per 100 parts by weight of the silicate mineral filler.
- 1 6. The method of claim 1, wherein the water in the first mixture and the silicate mineral filler
2 in the first mixture are provided by a water treated silicate mineral filler having a silicate mineral
3 filler to water weight ratio of from 1:4 to 10:1.
- 1 7. The method of claim 1, wherein the silicate mineral filler is selected from the group
2 consisting of clay, mica, talc, glass fiber, and silicates, and mixtures of the foregoing.
- 1 8. The method of claim 7, wherein the silicate mineral filler includes silica.

1 9. The method of claim 1, wherein, after said step of mixing the first mixture, the method
2 further comprises the steps of:
3 cooling the first mixture;
4 adding a cure package to the first mixture to create a second mixture; and
5 mixing the second mixture.

1 10. The method of claim 9, wherein the first mixture is created in a first mixing pass and the
2 second mixture is created in a second mixing pass, such that the method is a two pass mixing
3 process.

1 11. A silica filled rubber made by a process comprising the steps of: ~
2 adding a polymer base, silicate mineral filler, water, and silicate mineral coupling agent to
3 a mixer to create a first mixture, wherein the silicate mineral to water weight ratio is from 1:4 to
4 10:1; and
5 mixing the first mixture to a target temperature suitable for initiating coupling of the silicate
6 mineral filler to the polymer base.

1 12. The method of claim 11, wherein, after said step of mixing the first mixture, the method
2 further comprises the steps of:
3 cooling the first mixture;
4 adding a cure package to the first mixture to create a second mixture; and
5 mixing the second mixture.

1 13. The method of claim 12, wherein the first mixture is created in a first mixing pass and the
2 second mixture is created in a second mixing pass, such that the method is a two pass mixing
3 process.

- 1 14. A water treated silicate mineral filler comprising: 3
- 2 a silicate mineral filler and water, wherein the silicate mineral filler to water weight
- 3 ratio is from 1:4 to 10:1